Q1:

Which of the following best defines a haploid cell?

- A A cell that has two copies of each chromosome
- B A cell that divides to form two identical daughter cells
- C A cell that contains two copies of each pair of homologous chromosomes
- D A cell that only has one copy of each chromosome

Q2:

Which of the following best defines a diploid cell?

- A A cell that contains one copy of each chromosome
- B A cell that divides to form four identical daughter cells
- C A cell that contains two copies of each chromosome
- D A cell that contains two copies of each pair of homologous chromosomes

Q3:

How many chromosomes should appear in a karyotype of a human diploid body cell?

Q4:

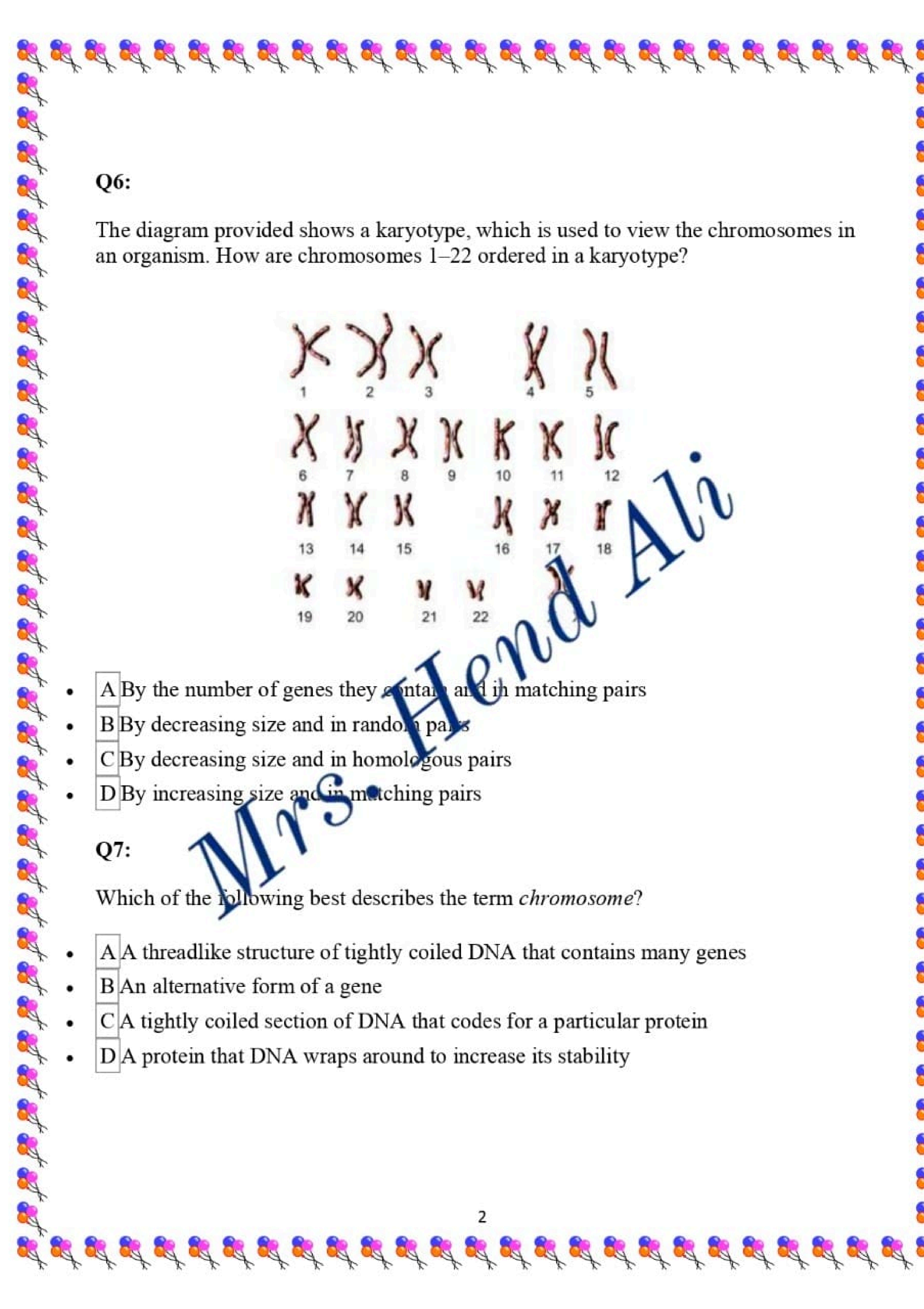
A human has 46 chromosomes in a diploid body cell. How many chromosomes will a haploid cell from this organism contain?

Q5:

The majority of human chromosomes are known as autosomes. How many chromosomes in a human karyotype of a somatic (body) cell are sex chromosomes?

Q6:

The diagram provided shows a karyotype, which is used to view the chromosomes in an organism. How are chromosomes 1–22 ordered in a karyotype?



- A By the number of genes they contain and in matching pairs
- B By decreasing size and in random pairs
- C By decreasing size and in homologous pairs
- D By increasing size and in matching pairs

Q7:

Which of the following best describes the term *chromosome*?

- A A threadlike structure of tightly coiled DNA that contains many genes
- B An alternative form of a gene
- C A tightly coiled section of DNA that codes for a particular protein
- D A protein that DNA wraps around to increase its stability

Q8:

A koala has 8 chromosomes in a haploid cell. How many chromosomes will a diploid body cell from this organism contain ?

Q9:

A passage about the use of karyotypes is provided, with two key terms removed.

Karyotypes arrange the chromosomes present in an organism into homologous pairs, in size order. Geneticists can analyze karyotypes to identify any genetic ,for instance, an individual having three copies of a instead of the normal pair, which could lead to diseases or developmental problems.

Which word would be most appropriate to replace the first blank?

- A Abnormalities
- B Consistencies
- C Tendencies
- D Expressions

Which word would be most appropriate to replace the second blank?

- A Allele
- B Chromatid
- C Chromosome
- D Nucleus

Q10:

Chromosomes are arranged in homologous pairs in the nucleus of eukaryotic cells. What is meant by the term *homologous pairs*?

- A Pairs of chromosomes that contain the same alleles
- B Pairs of chromosomes that are of a similar length and that have a similar gene positioning
- C Pairs of chromosomes that are inherited from one parent
- D Pairs of chromosomes that code for the same characteristic in different organisms

Q11:

Which of the following correctly describes the relationship between chromosomes and genes?

- A There are many genes located on a single chromosome.
- B There are many chromosomes within one gene

Q12:

Gregor Mendel investigated the inheritance of genes through breeding experiments using his pea plants. From these experiments, he postulated three laws of inheritance. Which of the following best explains Mendel's law of independent assortment?

- A Alleles on separate chromosomes will not interact with each other in offspring.
- B Genes that are responsible for different characteristics will be inherited independently of each other.
- C A gamete of an organism will carry only one allele for each gene.
- D The combination of alleles in the offspring will be dependent on the combination of alleles in the parents.

Q13:

Gregor Mendel bred a population of pea plants, producing a large number of offspring. Of this offspring 6 022 plants produced yellow seeds and 2 001 produced green seeds.

What percentage of the total offspring displayed the dominant trait? Give your answer to the nearest whole number

Q14:

Gregor Mendel investigated the inheritance of genes through breeding experiments using his pea plants. From these experiments, he produced three laws of inheritance. Which of the following best explains Mendel's law of segregation?

- A The alleles for a gene are kept at separate positions on a chromosome.
- B A gamete of an organism will carry only one allele for each gene.

- C When gametes combine in fertilization, the alleles for each gene will come from one parent only.
- D A gamete of an organism will carry only two alleles for each gene.

Q15:

Genes carry the code for proteins which are responsible for the appearance of genetic traits. Let's assume that the DNA sequence of a gene is changed leading to a change in its protein. The genetic trait controlled by this gene will .

- A stay the same
- B be duplicated
- C be altered
- D be blended with another trait

Q16:

Choose the correct statement regarding the chromosomal theory from the following.

- A Only sex chromosomes are found as homologous pairs in somatic cells and gametes.
- B The segregation of each pair of chromosomes into gametes is independent.
- C After the fertilisation of somatic cells, half of the number of chromosomes is lost to be $2n$.
- D Chromosomes are found in gametes as homologous pairs.

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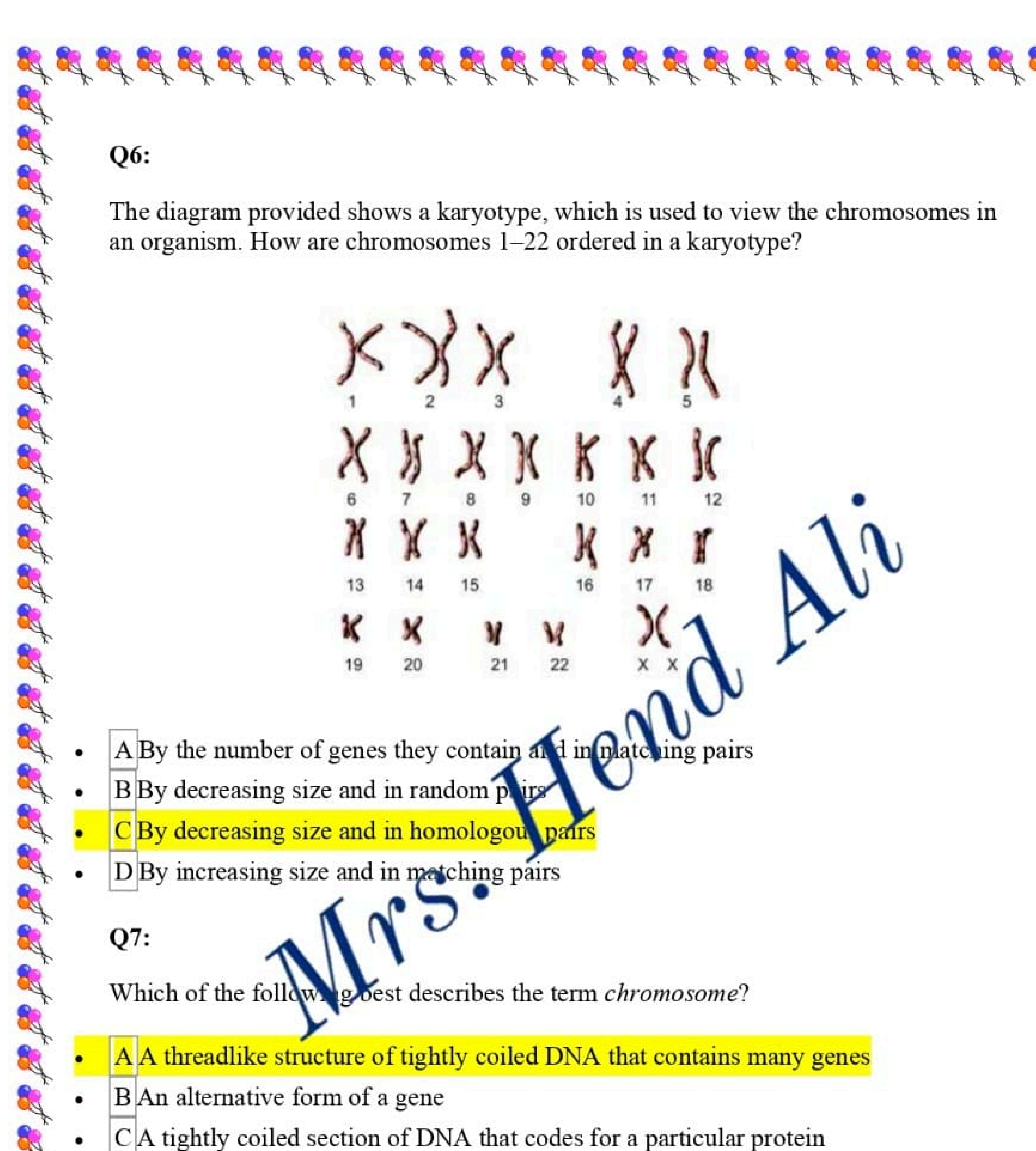
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-

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Questions

A) Choose the correct answer:

1- In lack of dominance case, the ratio of 2nd generation resulted from the copulation of two individuals different in one pair of opposite traits is ……….

A- 1:3 B- 1:2:1 C- 7:9 D- 1:2

2- When a man of blood group (AB) marries a woman of blood group (O), the ratio of children which have blood group (O) is ……..

A- 0% B- 50% C- 25% D- 75%

3- Blood group which has both types of antigens is……

A- A B- O C- AB D- B

4- Blood group which has both types of antibodies is…..

A- A B- O C- AB D- B

5- Blood group which is known as "Universal recipient" is

A- A B- O C- AB D- B

6- ……… gene is an example on recessive lethal genes

A- Yellow colour of mice B- Infantile dementia

C- Turner's syndrome D- Bulldog race in cow

7- The Karyotype of male cell is …………….

A- XX + 44 B- XY+44 C- XO + 44 D- XXY + 44

8- The Karyotype of female cell is ………

A- XX + 44 B- XY+44 C- XO + 44 D- XXY + 44

9- The appearance of chlorophyll is affected by the factor of ………

A-Temperature B- light C- humidity D- oxygen

10- The ratio of 2nd generation in case of complementary genes is

A-1:3:3:9 B- 9:7 C- 3:1 D- 1:2:1

11- Karyotype of Klinefelter's syndrome is …….

A- XXY + 44 B- XO +44 C- YO + 45 D- XY + 45

12- Karyotype of Turner's syndrome is …………….

A- XXY + 44 B- XO +44 C- YO + 45 D- XY + 45

13- Down syndrome in males is caused by the fertilization of an ovum (X+22) with sperm

A- X + 23 B- Y + 23 C- X + 22 D- Y+22

14- ………. put modern classification system

A- Robert Brown B- Aristotle

C- Charles Darwin D- Robert Whittaker

15- Kingdom …….. individuals are prokaryotes

A- Monera B- Protista C- Animalia D- Plantae

16- ……….. are prokaryotes which live in extreme environmental conditions

A- Eubacteria B- Achaeabacteria

C- Rhodophyta D- Sporozoa

17- ………… is an example of Eubacteria

A- Amoeba B- Pencilium C- Nostoc D- Euglena

18- ………. moves by using pseudopodia

A- Amoeba B- Trypanosome C- Plasmodium D- Paramecium



19- …….. moves by using cilia

A- Amoeba B- Trypanosome C- Plasmodium D- Paramecium

20- …….. moves by using flagella

A- Amoeba B- Trypanosome C- Plasmodium D- Paramecium

21- ……….. causes sleeping disease in human

A- Amoeba B- Trypanosome C- Plasmodium D- Paramecium

22- ……… causes malaria in human

A- Amoeba B- Trypanosome C- Plasmodium D- Paramecium

23- ………. is from Ascomycota

A- Pencilium B- (A and D)

C- Mushroom D- Yeast fungus

24- ……….. is from unicellular Ascomycota

A- Pencilium B- Rhizopus nigricans

C- Mushroom D- Yeast fungus

25- ……… is from multicellular Ascomycota

A- Pencilium B- Rhizopus nigricans

C- Mushroom D- Yeast fungus

26- ……… is from Basidimycota

A- Pencilium B- Rhizopus nigricans

C- Mushroom D- Yeast fungus

27- ……… secretes enzyme which is used in cheese industry

A- Pencilium B- Rhizopus nigricans

C- Mushroom D- Yeast fungus

28- ……….. is from multicellular Chlorophyta

A- Spirogyra B- Fucus

C- Chlamydomonas D- Vougheir

29- ………. is an example of erect Bryophyta

A- Funaria plant B- Ricca C- Vougheir D- Pinus

30-………. is an example of flat Bryophyta

A- Funeria plant B- Ricca C- Vougheir D- Pinus

31- Yeast belongs to kingdom ……

A- Animalia B- Plantae C- Protista D- Fungi

32- ………. is from monocotyledons

A- corn B- Pea C- Cotton D- Bean

33- ……… animal belongs to phylum Porifera

A- Lampreys B- Sponges C- Jellyfish D- Bats

34- Bees belong to ………..

A- Crustaceans B- Insects

C- Arachnids D- Myriapods

35- Scorpions belong to ……….

A- Crustaceans B- Insects C- Arachnids D- Myriapods

36- …….. is from cartilaginous fish

A- Bouri B- Bolty C- Shark D- Shrimps

37- ……… are from amphibians

A- Frogs B- Geckos C- Jerboa D- Snakes

38- Fetuses of ……….. phylum have notochords

A- Chordata B- Porifera C- Mollusca D- Anthropoda



39- ……….. is from Eutheria

A- Platypus B- Kangaroo C- Lions D- Chameleons

40- ……….. is from Prototheria

A- Human B- Lions C- Platypus D- Kangaroo

41- ……… is an animal which lays eggs and has mammary glands

A- Platypus B- Kangaroo C- Lions D- Chameleons

B) Write the scientific term:

1- The arrangement of chromosomes of cells in descending order according to their size and number.

2- A form of inheritance in which no genes dominate over the opposite one, but they interact forming new trait

3- chemical substances which exist on the surfaces of red blood cells, they play an important role in blood transfusion process.

4- A kind of antigens whose inheritance is controlled by three pairs of genes which are carried on one chromosome pair.

5- Genes which interact with each other causing the appearance of a hereditary trait.

6- Genes which obstruct growth and cause death at different ages when they exist in pure (homozygous) form

7- Genetic disorder caused by the increase of sex chromosome (X) in some males (XXY + 44)

8- Genetic disorder caused by the decrease of chromosome (X) in some females (XO+44)

9- Genetic disorder caused by the existence of an additional chromosome in chromosome pair (21)

10- They are traits whose genes are carried on sex chromosomes , but their appearance is not affected by sex hormones.

11- They are traits whose genes are carried on somatic chromosomes, and their appearance is affected by sex hormones.

12- Genetic disease which causes the inability of body to control blood clotting process – the process which stops bleeding

13- They are traits which appear in one of the two sexes only due to the difference in sex hormones

C) Compare between:

1- Blood types (A) and (B)

2- Lethal genes and Complementary genes

3- Klinefelter's , Turner's and Down's syndromes.

4- Sex linked , sex influenced and sex limited genes.

D) Give reasons for:

1- When two individuals different in one pair of hereditary traits copulate, the second generation ratio is 1:2:1 not 1:3

2- The importance of blood groups

3- Blood group (O) is a universal donor, while blood group (AB) is a universal recipient

4- The scientific importance of taxonomy (classification)

5- Neither tigons nor mules are species

6- The importance of dichotomous key

7- Cyanobacteria belong to kingdom Monera

8- Amoeba belongs to phylum Sarcodina in Protista

9- Trypanosoma is harmful for humans

10- Plasmodium is harmful to humans

11- Mushroom is from fungi

12- Rhizopus nigricans is from Zygomycota

13- Mushroom is from Basidimycota

14- Polysyphonia algae is from Rhodophyta

15- Ricca is from Bryophyta

16- Pinus plant belongs to gymnosperms (conifers)

17- Monocotyledons are from angiosperms

18-Corn is from monocotyledons

19- Cotton is from Dicotyledons

20- Sponges are also called Porifera

21- Sponges are classified as animals although they cannot move

22- Cnidaria have cindocytes (stinging cells)

23- Falaria (or Ascaris) worm belongs to phylum nematoda

24- Ants are from insects

25- The importance of vertebral column in vertebrata sub-phylum individuals

26- Duck-pilled platypus belongs to subclass Prototheria

27- Duck-pilled platypus is the intermediate link between birds and mammals.

28- Kangaroo belongs to Methatheria

29- Dolphins are mammals although they live in water

30- Bats are mammals although they can fly



E) What happens when:

1- Transfusing blood from a man of group (AB) to another one of group (A)

2- (Rh-) woman married (Rh+) man (with respect to the first and second babies)

3- Two sweet pea plants with white flowers whose genotypes are (aaBB) and (AAbb) copulate (first and second generations)

4- Breeding two yellow mice (Yy)

5- Planting corn plant seedlings in a dark place

6- A sperm (Y+22) fertilizes an abnormal ovum (XX+22)

7- A sperm (X+22) fertilizes an abnormal ovum (O+22)

8- The fertilization of a gamete carrying a complete pair of chromosome in pair (21)

9- A female lion and male tiger interbreed (cross)

10- A female donkey and a male horse cross

11- Trypanosome parasite reaches to human blood

12- Plasmodium parasite phases reach to human blood

13- Leaving a wet piece of bread in a damp and warm place for some days

F) Write short notes about

1- Chromosomal theory

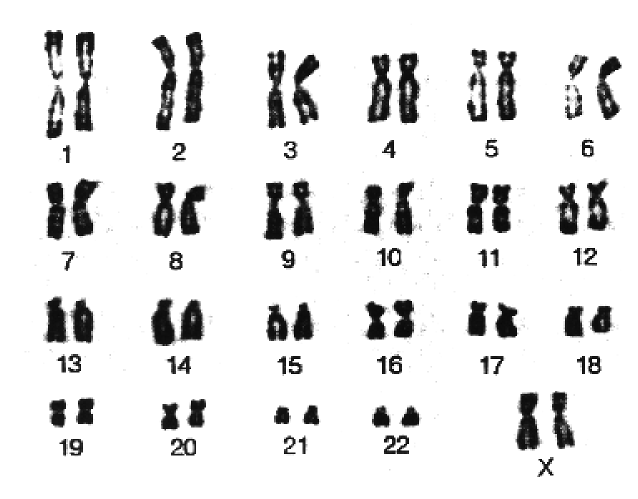
2- Karyotype

3- Dangers of blood transfusion

4- Rhesus factor

G) Examine the figure then answer:

The following figure describe Karyotype of a cell, answer the questions



1- What does this Karyotype describe, a somatic cell or gamete? Why?

2- What is the sex of the person carrying this Karyotype ? Why?

3- What is the number of somatic and sex chromosomes?

H)1- The following table illustrates the generation resulted from the breeding of two sweet pea plants, then answer the following questions

♀ / ♂	AB	--	aB	ab
--	(1)	AABb	(2)	AaBb
--	(3)	AAbb	(4)	Aabb

1- What are the genotypes of (1), (2), (3), (4)

2- Find the genotypes of the parents

3- What is the percentage of white flowers in this generation?

4- What is the colour of flowers produced from the breeding of plant (4) with (3)

2- Answer the following question

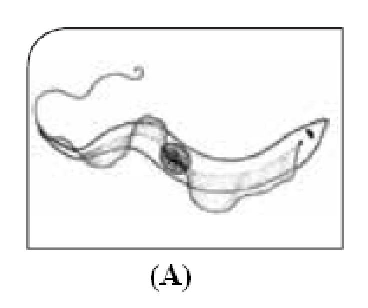
Group	anti–a	anti–b
....		
....		
....		
....		

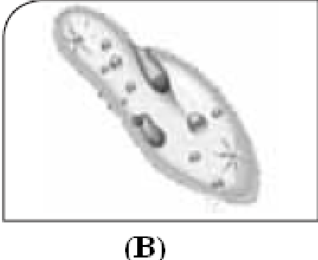
1- Complete the previous table mentioning blood groups

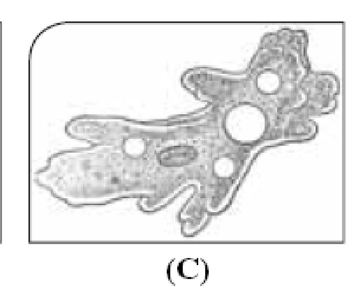
2- Which blood group has both types of antigens?

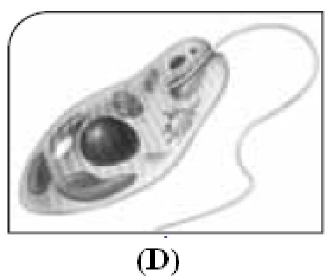
3- Which blood group has both types of antibodies?

3- The following figures describe some living organisms, answer the questions


(A)


(B)


(C)


(D)

1- Determine the phyla and classes to which the previous organisms belongs

2- Mention the method of movement of the previous organisms



I- Rationalize the following cases on a genetic basis

1- A man of blood group (A) married a woman of blood group (B) and had a child of blood group (O)

2- A woman whose blood group is (AB) has a son of the same blood group, what are the probable genotypes of the father?

3- Breeding antirrhinum plant with red flowers with another one of pink flowers.

j- Classify each of the following:

1-Amoeba

(Kingdom Protista – Phylum Protozoa – Class Sarcodina)

2-Ascaris

(Kingdom Animalia – Phylum: Nematoda)

3-Bats

(Kingdom Animalia – Phylum Chordata – subphylum vertebrata – class: Mammalia – subclass: Eutheria – Order: Chiroptera)

4-Bean

(Kingdom Plantae – Phylum Tracheophyta – class: Angiosperma – Subclass: Dicotyledon)

5-Bees

(Kingdom Animalia – Phylum Anthropoda – Class insecta)

6-Bouri fish

(Kingdom Animalia – Phylum Chordata – subphylum vertebrata – class: Osterichthyes)



7-Bread mould

(Kingdom Fungi – Phylum: Zygomycota)

8-Cockroach

(Kingdom Animalia – Phylum Anthropoda – Class insecta)

9-Corn

(Kingdom Plantae – Phylum Tracheophyta – class: Angiosperma – Subclass: Monocotyledon)

10-Cyanobacteria

(Kingdom Monera – Phylum: Eubacteria)

11-Duck-pilled platypus

(Kingdom Animalia – Phylum Chordata – subphylum vertebrata – class: Mammalia – subclass: Prototheria)

12-Human

(Kingdom Animalia – Phylum Chordata – subphylum vertebrata – class: Mammalia – subclass: Eutheria – Order: primates)

13-Hydra

(Kingdom Animalia – Phylum Cnidaria – Class: Hydrozoa)

14-Ostrich

(Kingdom Animalia – Phylum Chordata – subphylum vertebrata – class: Mammalia – subclass: Eutheria – Order: Aves (birds))

15-Pea

(Kingdom Plantae – Phylum Tracheophyta – class: Angiosperma – Subclass: Dicotyledon)



16-Pencilium

(Kingdom Fungi – Phylum Ascomycota)

17-Ricca

(Kingdom Plantae – Phylum: Bryophyta)

18-Toads → Frogs

Tortoise

(Kingdom Animalia – Phylum Chordata – subphylum vertebrata – class: Mammalia – subclass: Eutheria – Order: Amphibia)

19-Trypanosome

(Kingdom Protista – Phylum: Protozoan – Class: Flagellata)

Answers

A-Choose:

1-B	2-A	3-C	4-B	5-C	6- B	7-B
8-A	9-B	10-B	11-A	12-B	13-B	14-D
15-A	16-B	17-C	18-A	19-D	20-B	21-B
22-C	23-B	24-D	25-A	26-C	27-B	28-A
29-A	30-B	31-D	32-A	33-B	34-B	35-C
36-C	37-A	38-A	39-C	40-C	41-A	

B- Write the scientific term:

1- Karyotype
2- lack of dominance
3- antigen
4- Rh factor
5- Complementary gene
6- Lethal gene
7- Kline fetter's syndrome
8- Turner's syndrome
9- Down's syndrome
10-Sex-linked
11-Sex-inflexenced
12-Haemophilia.
13- Sex- limited traits

C) Compare:

Blood group (A)	Blood group (B)
- It has antigens-a - It has antibodies (anti-b) - Its genotype is AA or AO - Receives blood from groups (A), (O) - Gives blood to groups (A) and (AB)	- It has antigens-b - It has antibodies (anti-b) - Its genotype if BB or BO - Receives blood from groups (B), (O) - Gives blood to groups (B), (AB)



Lethal genes	Complementary genes
- They are genes which cause the death of living organisms if they are present in pure form because they stop its biological processes Ex. Yellow colour of mice trait	- They are genes which interact together forming new trait Ex. Flower colour of sweet pea plant

3,4) Answer by yourself

D)Give reasons for:

1- Because the genes of those different traits do not dominate over each other. So, they interact with each other forming new trait, which appears in 2nd generation with the two opposite traits at ratio 1:2:1 (not 1:3 – as Mendel laws state – because of the lack of dominance)

2-Because they :-

- Solve problems of the determination of paternity (parents of children) and pedigree of children (blood groups denies pedigree but don't prove it)
- Determine blood transfusion processes between individuals.
- Are used in the study of human races classification and evolution

3-Blood group (O) is a universal donor because it Doesn't have both antigen-a or antigen-b and doesn't have any antibodies, which

makes it capable of giving blood to all groups. While blood group (AB) is a universal recipient because it has both antigen a and antigen b and doesn't contain any antibodies, which makes it capable of receiving blood from all types.

4-Because it deals with the arrangement of living organisms according to their differences and similarities, which facilitates their study.

5-Because both of them are infertile and cannot produce new fertile individuals, as they are resulted from the crossing of organisms of different species

6-Because it helps us determine the species of an unknown organism through its characteristics

7-Because:-

1- They are unicellular prokaryotic organisms

2- They live alone or in colonies

3- Their cell walls are devoid of cellulose or pectin

4- Their hereditary material is not surrounded by a nuclear membrane (doesn't have a definite nucleus)

5- Cytoplasm doesn't contain some organelles such as mitochondria, endoplasmic reticulum, plastids and Golgi bodies

8-Because they move by using temporary projections from the body called pseudopodia

9-Because Trypanosoma parasites on humans causing sleeping disease

10-Because it causes malaria disease to them

11-**<u>Because:-</u>**

1- They are multicellular eukaryotes

2- They are immobile (cannot move) and their cell walls contain chitin

3- They are composed of filaments called Hyphae, which accumulate forming Mycelium

12-Because their Hyphae are not divided and they produce spores inside sporangia

13-Because its Hyphae are divided and its spores are formed inside a structure called cap

14-Because it is from marine weeds whose filaments are held together by a gelatinous membrane and its cells contain plastids carrying red pigment

15-Because Ricca doesn't have vascular plants which transport food and water, they are small green plants which have hair for anchorage called Rhizoids

16-Because it doesn't form flowers and has female or male reproductive organs called cones. Its seeds has not testa and it has needle-shaped leaves

17-Because they are terrestrial plants which have stems, leaves and roots, and they form flowers which turn into fruits carrying seeds

18-Because its seed has only one cotyledon, its leaves veins are parallel, its petals exist in multiples of 3, bundles of its vascular tissues are scattered through the stems and its roots are fibrous

19-Because its seed has two cotyledon, its leaves veins are reticulated, its petals exist in multiples of 4 or 5 , bundles of its vascular tissues are arranged across the in a ring and its roots are taproot20-Because the walls of their bodies have many canals and pores

21-Because they are multicellular heterotrophic living organisms whose cells lack cell walls.

22-To protect them and help them in predation

23-Because it has round (cylindrical) shape and its alimentary canal has two openings: mouth – anus.

24-Because their bodies are divided into three parts (Head – thorax – abdomen), they have complex eyes and three pairs of legs for movement

25- Because it surrounds and protects the spinal cord

26- Because they do not give birth, but they lay eggs. Babies feed on milk secreted from mammary glands on the abdomen of mother. They have cloacal opening through which wastes and eggs emerge

27-Because it lays eggs and do not give birth (birds characteristics), but its babies feed by suckling the milk secreted from mammary glands on its abdomen (mammals characteristic)

28-Because it gives birth to not fully-developed babies, so it keeps them inside their pouch, where they suckle the milk secreted from its mammary glands until they become fully developed

29-Because they feed their babies with milk secreted from mammary glands and they also have lungs for breathing atmospheric air

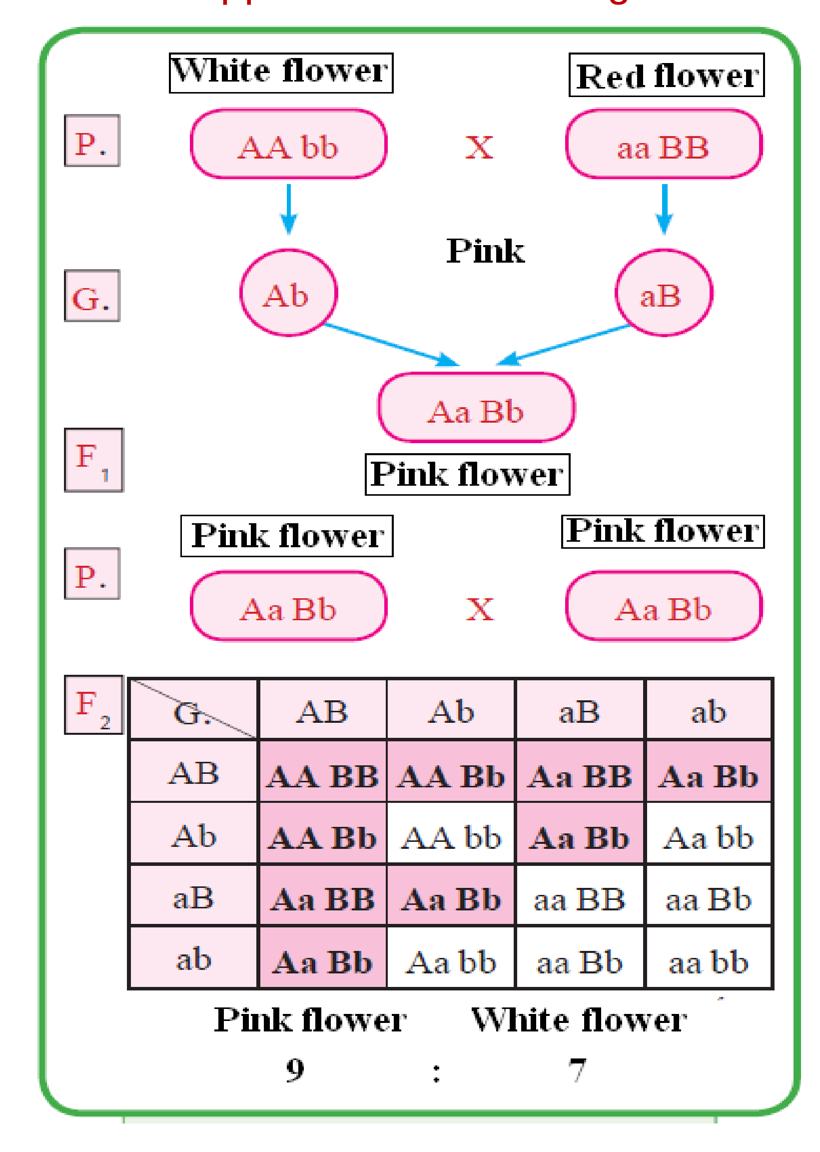
30-Because they give birth and have mammary glands and their forearms are modified into wings.

F) What happens?

1-This will break red blood cells of the recipient person because his blood produces anti-b for antigens-B of blood group (AB), which causes shivering in body, chest pain, blueness, irregular heartbeat, headache, low blood pressure

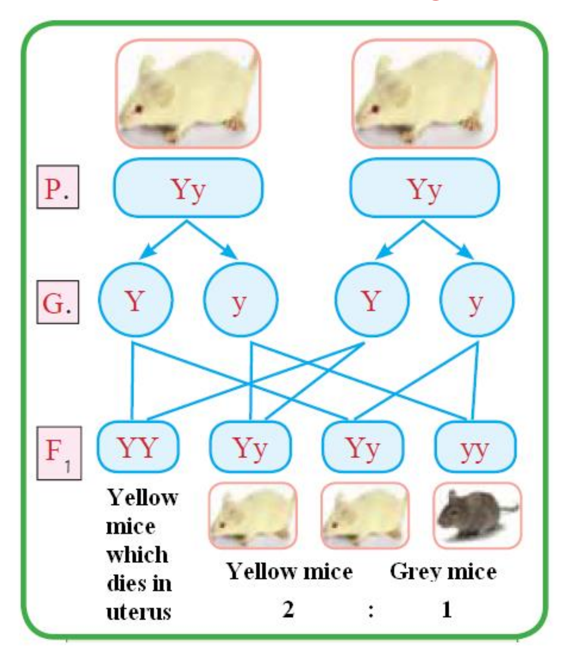
2-When the woman becomes pregnant with the first baby (which is Rh+), a part of his blood transfers from him to his mother, which stimulates her immune system to produce antibodies of Rh factor antigens. If mother wasn't given vaccine after delivery of the first baby, and became pregnant again with another baby, Rh+ blood transfers from mother to her second baby through placenta, which breaks up his red blood cells and causes him acute anemia and even death.

3-100% pink flowers are produced in the first generation, while both pink and white flower appear in the second generation at ratio 9:7



G.	AB	Ab	aB	ab
AB	**AA BB**	**AA Bb**	**Aa BB**	**Aa Bb**
Ab	**AA Bb**	AA bb	**Aa Bb**	Aa bb
aB	**Aa BB**	**Aa Bb**	aa BB	aa Bb
ab	**Aa Bb**	Aa bb	aa Bb	aa bb

4- Hybrid yellow and black mice are produced at ratio 2:1 respectively, pure yellow mice (YY) - which represent 25% of the generation – die in uterus before being born.



5-Seedlings lose their green colour due to the lack of chlorophyll, as the gene responsible for chlorophyll formation is activated only by light (which is absent

6- Klinefilter's male will born

7- Turner's female will born.

8-A male fetus (XY+45) or female fetus (XX+45) suffering from Down syndrome is formed (because of having 3 copies of chromosome 21), which causes mental retardation, short stature, oval face, flat head back, short fingers and toes, small ears and narrow eyes

9-Tigons are formed, which are organisms incapable of reproduction.



10-Mules are formed, which are organisms incapable of reproduction

11-This will cause the infection with sleeping disease

12-This will cause the infection with malaria disease

13-Rhizopus nigricans fungus (bread mould) is formed, which rotten this piece of bread.

E) Write short note :

1- Scientists Boveri and Sutton put chromosome theory in 1902, which states that:-

a- Chromosomes exist in somatic cells in the form of homologous pairs (2n)

b- Gametes contain half the no. of chromosomes in somatic cells as a result of meiotic cell division; where homologous pairs get separated from each other forming two identical groups

c- Each pair of chromosomes acts independently when transferring to gametes.

d- After fertilization process, the normal number of chromosomes (2n) comes back

e- Each chromosome carries hundreds of genes.

2,3 Answer by yourself .

4-Rhesus factor is a kind of antigens which exist on the surfaces of red blood cells of 85% of humans, its inheritance is controlled by 3 pairs of genes which exist on one chromosome pair.

G- The following figure describe Karyotype of a cell, answer the questions

1- Somatic cell, because it contains 23 pairs of chromosomes (diploid cell 2n)

2- Female, its sex chromosome is homologous (XX)

3- Somatic chromosomes: 44 (22 pairs)   Sex chromosomes: 2 (1 pair)

H-1- The following table illustrates the generation resulted from the breeding of two sweet pea plants, then answer the following questions

♀ \ ♂	AB	Ab	aB	ab
AB	(1)	AABb	(2)	AaBb
Ab	(3)	AAbb	(4)	Aabb

1- (1) AABB
   (2) AaBB
   (3) AABb
   (4) AaBb

2- Genotype of 1st parent: AaBb
   Genotype of 2nd parent: AABb

3- 25%

4- 75% Pink flowers
   25% white flowers

2)

Group	anti-a	anti-b
A		
B		
AB		
O		

2- (AB) group

3- (O) group

3-1-

(A) Trypanosome: (Kingdom Protista – Phylum Protozoa – Class Flagellata)

(B) Paramecium: (Kingdom Protista – Phylum Protozoa – Class Ciliophora)

(C) Amoeba: (Kingdom Protista – Phylum Protozoa – Class Sarcodina)

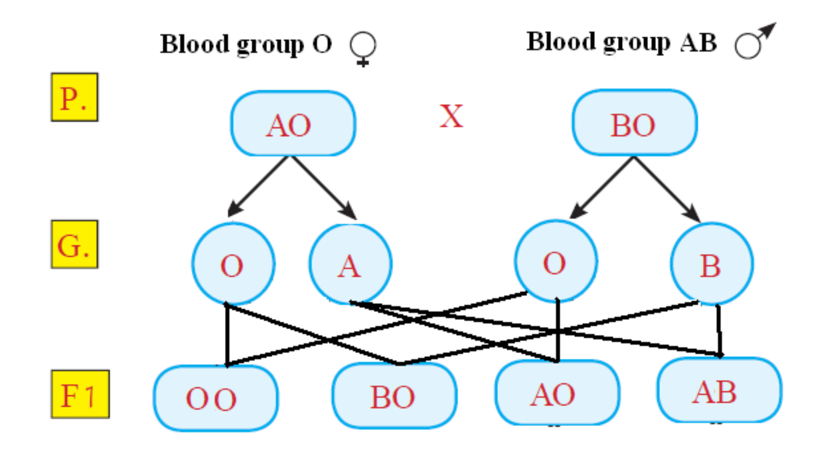
(D) Euglena: (Kingdom Protista – Phylum Euglenophyta)

2-

(A)Flagella (B) Cilia (C) Pseudopodia (D) Flagella

I- Rationalize the following cases

Case (1)



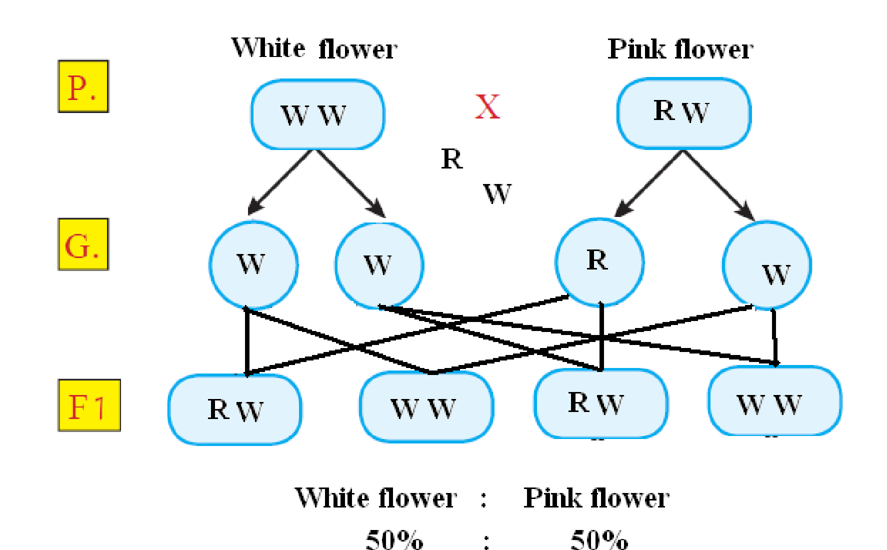
Case (2)

Genes forming blood type (AB) are (A) and (B)

Thus, father should have at least one of those genes in his blood type

Probable genotypes of father are (AO) – (AA) – (AB) – (BO) – (BB)

Case (3)



Good Luck

1- Which figure is the most valid to express the karyotype of the human male?

2- W

The following diagram illustrates the structure of human sperm,

(Tail) (Neck) (Head)

which is/are the sexual chromosome(s) found in the head?

- Either chromosome (X) or (Y).
- Both chromosomes (X) and (Y).
- Always chromosome (X).
- Always chromosome (Y).

3- Two strains of the pea flower plant were crossed together; one of which is pink flower and the other is white flower.
The ratio of the colour of the resulting plant flower is (3) pink : (5) white
What are genotypes of the parents?

- AaBb × aaBb
- aabb × AABB
- aaBb × AABB
- AaBB × aaBb

4- A normal man married a woman with Down's syndrome.
Which one of the following individuals can't be their child?

- Female with Down's syndrome.
- Normal male.
- Male with Klinefelter's syndrome.
- Normal female.

5- The increase of phenyl Keaton in urea (PKU) is a genetic disease, and it was observed that the people who carry that gene did not show its symptoms by following a special diet.
What do you deduce from this phrase?

- The gene causing the disease (PKU) is a recessive gene.
- The gene causing the disease (PKU) has a weak effect.
- Following a healthy diet cures all genetic diseases.
- The effect of (PKU) gene depends on environmental factors.

6- A young man married a woman (both are normal) and had a girl who will not reach puberty and suffers from congenital defects in heart and kidneys.
Which of the following is the chromosomal structure of the mother?

- (44+XX)
- (23+XX)
- (45+XX)
- (22+XX)4

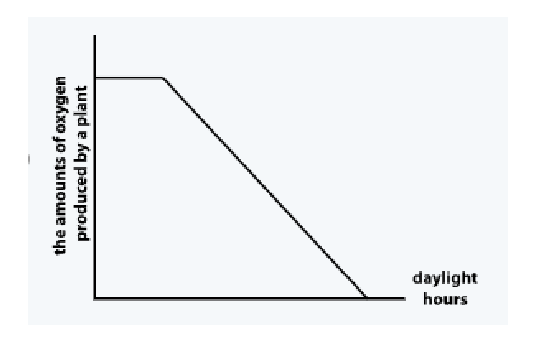
7- A woman has blood group (A) and her husband has blood group (B).
Which genotype of blood group could not be inherited by any of their children?

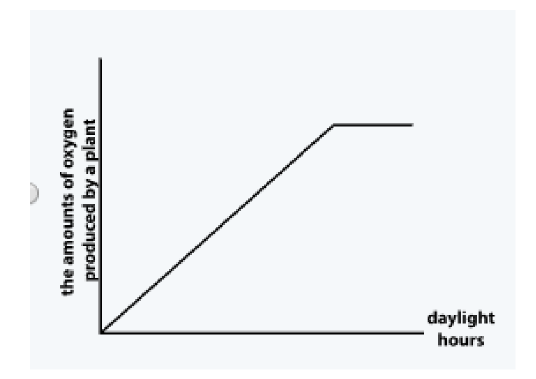
- AA
- AB
- AO
- OO

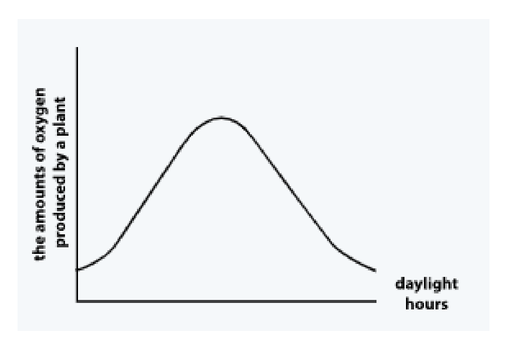
8- A man married a woman and had four girls; if the woman got pregnant again, what is the probability that the fifth child will be a boy ?

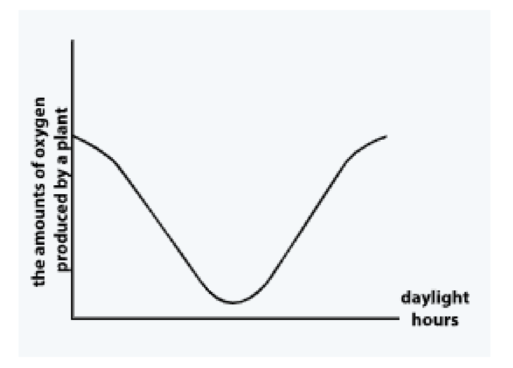
- 1/5
- 1/4
- 1/3
- ½

9- Which of the following graphes shows the effect of Chlorophyll gene on a plant during daylight hours (from sunrise to sunset)?









10- A woman, who carries a haemophilia gene, married a man with haemophilia disease.
What is the expected percentage of appearance of haemophilia disease in the 1st pregnancy if the fetus will be male?

- Zero %
- 50 %
- 100 %
- 25 %

11- Q

The Following figure shows the sequence of Rhesus factor genes on a part of the chromosome of three individuals (Mariem, Nadia and Karim)

A blood sample is taken from each of them, for blood analysis.

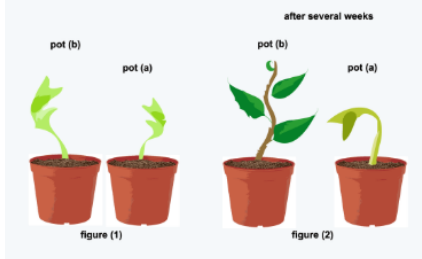
Karim: a, D, e
Nadia: a, d, e
Mariem: A, d, E

Which of them has no Rhesus factor antigen on the surface of his/ her red blood cells?

12- Q

Plant seeds were grown till germination as shown in figure (1). After several weeks of moving the plant to an illuminated place with similar conditions of soil and irrigation in both pots.

It was observed that the plant in pot (b) only is growing, while the plant in pot (a) did not grow as shown in figure (2).



Explain the growth stopping of the germinated seed in the pot(a).

13- Q

The following figure illustrates the karyotype of an individual

What is the chromosomal structure of the gametes produced by this individual?

14- If you know that long eyelashes gene in human is dominant (T) to short eyelashes gene (t).
If a man with long eyelashes married a woman with short eyelashes and had a child with short eyelashes.

What are the genotypes of these parents?

15- A man with a blood group (A) and his chromosomal structure is (44 + XXY) married a woman with a blood group (B) and her chromosomal structure is (44 + XX)

They had a child with blood group (AB).

a) Do you agree with this phrase?

……………………………………………………………………

b) Explain your answer?

……………………………………………………………………

16- A child suffers from acute anemia and needs blood transfusion several times; both his parents and his brother alternately donate blood to him, although each of them has a different blood group.

a- What is the child's blood group?

....

b- Which pattern of inheritance of blood groups belongs to the child's blood group?

....

17- Q

If you know that muscle atrophy trait is caused by sex-linked lethal recessive gene carried on (X) chromosome.

The following figure represents the inheritance of this trait in a family.

If (square-shape) represents a male and (circle-shape) represents a female, while the (shaded shapes) represents the sick individuals.

Determine the genotypes of the two individuals (1) and (3)

(Concerning that the symbole of muscle atrophy gene is (a))



Subject: Biology

Choose the correct Answer:

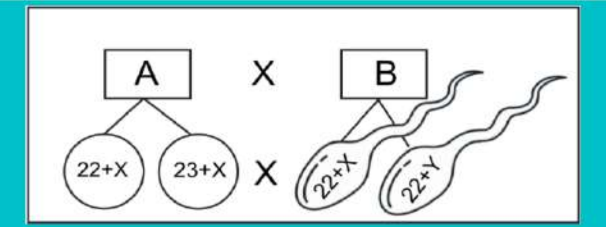
Q 21. What is the genotype for a flowering pea plant with white flowers that carries the largest number of dominant genes?

A) **aaBb**
B) **AABb**
C) **AABB**
D) **AAbb**

Q 22. Which of the following chromosomal structure represents a gamete that can be produced by a normal male or female in human?

A) (22 + X)
B) (22 + Y)
C) (22 + XX)
D) (22 + XY)

Q 23.



What is the percentage of normal females resulting from this fertilization?

A) 25 %
B) 50 %
C) 75 %
D) 100 %



Q 24. Which of the following diagrams represents the result of mating of a father who is a universal donor for blood groups and a mother her blood doesn't have any antibodies for blood groups?

A)

A B

% of resulted individueals: 100%, 75%, 50%, 25%, 0%

Blood group: A, B

B)

O AB

% of resulted individueals: 100%, 75%, 50%, 25%, 0%

Blood group: O, AB

C)

A B

% of resulted individueals: 100%, 75%, 50%, 25%, 0%

Blood group: A, B

D)

A B AB O

% of resulted individueals: 100%, 75%, 50%, 25%, 0%

Blood group: A, B, AB, O



Q 25. What is the number of different gametes that are produced from an individual whose structure Aabb?

A) 1

B) 2

C) 3

D) 4

Q 26. The mutation (a)in human is a recessive, sex linked and lethal for the pure embryos before birth. What is the percentage of dead babies that resulted from the marriage of a healthy man and carrier woman for this gene?

A) 100% females

B) 100% males

C) 50% of females

D) 50% of males

Q 27. In Antirrhinum plant, which of the following crossing produces more than two different phenotypes of flowers colour?

A) Pink X White

B) Pink X Red

C) White X White

D) Pink X Pink



Q 28. **The albinism in human is a recessive trait that represented by (aa).**
What is the result of mating a man and a woman both of them are a normal hybrid for this trait?

A) 25% Albino
B) 100% normal
C) 50% Albino
D) 50% normal

Q 29. **Which of the following cases it isn't necessary to inject a (Rh-) mother with the antiserum for (Rh) factor?**

A) The 1st baby is (Rh^{+})
B) The father is pure (Rh^{+})
C) The father is (Rh^{-})
D) The 2nd baby is (Rh^{+})

Q 30. **Which of the following chromosomes has the <u>largest</u> size in the human karyotype?**

A) Chromosome (22)
B) Chromosome (Y)
C) Chromosome (9)
D) Chromosome (X)

الأحياء

الموضوع	المفهوم	ما يرتبط بالمفهوم	أرقام– نسب– أمثلة
نظرية الكروموسومات	الكروموسومات	• عددها ثابت في النوع الواحد. • يختلف العدد من نوع لآخر. • بكل خلية نوعين (جسدية وجنسية)	▪ (2 ن) في الخلايا الجسدية. ▪ (ن) في الأمشاج.
	الطرز الكروموسومي	• ترقيم ترتيب الكروموسومات تنازليا حسب حجمها	▪ التركيب الصبغي لذكر الإنسان (44+XY) ▪ التركيب الصبغي لأنثى الإنسان (44+XX)
قانون مندل الأول	انعزال العوامل	• زوج واحد من الصفات المتضادة – عند تكوين الأمشاج بالانقسام الميوزي حدث انعزال للجينات	▪ تظهر الصفة السائدة في الجيل الأول بنسبة 100 % ▪ وتظهر الصفتان السائدة والمتنحية معا في الجيل الثاني بنسبة (3 سائد: 1 متنحي)
قانون مندل الثاني	التوزيع المستقل	• زوجان من الصفات المتضادة • تم توزيع الجينات المحمولة على الكروموسومات توزيع حر لأن كل جين يقع على كروموسوم مستقل	▪ الجيل الأول 100 % صفات سائدة لكلا الصفتين ▪ الجيل الثاني بنسبة (9: 3: 3: 1)
تداخل فعل الجينات	انعدام السيادة	• يتحكم في وراثة لون الأزهار في نبات شب الليل زوج واحد من الجينات لا يسود أي منهما على الآخر، وينتج من وجودهما مع صفة وسط (جديدة)	▪ (100% صفة وسيطة جديدة) في الجيل الأول ▪ (1: 2: 1) في الجيل الثاني
	عامل ريسوس	• يتحكم في ظهور مولدات عامل ريسوس ثلاثة أزواج من الجينات يحملها زوج واحد من الكروموسومات وجود جين واحد منها فقط بصورة سائدة تجعل الشخص (Rh^+)	

<table>
<tr><th>الموضوع</th><th>المفهوم</th><th>ما يرتبط بالمفهوم</th><th>أرقام- نسب- أمثلة</th></tr>
<tr><td></td><td>التقسيم الوراثي لفصائل الدم</td><td colspan="2">

الفصيلة	الطرز الجيني	المادة المولدة	الجسم المضاد
A	AA , AO	a	anti-b
B	BB , BO	b	anti-a
AB	AB	a , b	---
O	OO	---	anti-a, anti-b

</td></tr>
<tr><td></td><td>الجينات المتكاملة</td><td>• جينات تشترك فيما بينها لإظهار الصفة الوراثية السائدة حيث يتحكم في توريث هذه الصفة زوجان من الجينات ويتوقف ظهور الصفة السائدة على وجود جين سائد واحد على الأقل من كلا الزوجين، أما غياب أي زوج من الجينات السائدة أو كلاهما سيؤدى الى عدم ظهور الصفة السائدة وتظهر الصفة المقابلة المتنحية</td><td>▪ نسبة الصفة السائدة في الجينات المتكاملة 100% في الجيل الأول
▪ الجيل الثاني ٩ سائد: ٧ متنحى</td></tr>
<tr><td></td><td>الجينات المميتة</td><td>• جينات إذا تواجدت بصورة نقية تسبب موت الكائن الحي</td><td>▪ المميتة السائدة (لون الشعر الأصفر في الفئران)
▪ المميتة المتنحية (العته الطفولي في الإنسان)</td></tr>
<tr><td></td><td>الصفات المرتبطة بالجنس</td><td>• تقع الجينات على الكروموسوم الجنسي فقط</td><td>▪ وراثة لون العين في حشرة الدروسوفيلا
▪ وراثة عمى الألوان في الإنسان</td></tr>
<tr><td></td><td>الصفات المتأثرة بالجنس</td><td>• تقع الجينات على الكروموسومات الجسدية
• تتأثر بالهرمونات الجنسية</td><td>▪ صفة القرون في الماشية
▪ صفة الصلع في الإنسان</td></tr>
<tr><td></td><td>الصفات المحددة بالجنس</td><td>• يقتصر ظهورها على أحد الجنسين</td><td>▪ إنتاج الحليب في الإناث
▪ ظهور اللحية في الذكور
▪ وضع البيض في إناث الطيور</td></tr>
</table>

الموضوع	المفهوم	ما يرتبط بالمفهوم	أرقام– نسب– أمثلة
الوراثة الجنسية		• وجود الكروموسوم Y ينشط الهرمونات الذكرية • غياب الكروموسوم Y ينشط الهرمونات الأنثوية	▪ في الأسبوع السادس من الحمل لتكوين الخصيتين ▪ في الأسبوع الثاني عشر لتكوين المبيضين
الحالات الكروموسومية الشاذة في الإنسان	• حالة كلاينفلتر • حالة تيرنر • حالة داون	• (44+XXY) • (44+X) • (45+XX)، (45+XY)	▪

Basic Concepts of Biology

1st Secondary

Topic	Concept	What is related to the concept	Number - % - Examples
Chromosomal Theory	Chromosomes	• The number of chromosomes differs from one species to another. • It is constant in the individuals of the same species. • Each cell contains two types of chromosomes (autosomes or somatic chromosomes & sex chromosomes)	• Chromosomes are found in somatic or body cells as homologous pairs (2n) • Sex cells (gametes) contains the half of chromosomal number (n).
	Karyotype	• Chromosomes are arranged in descending order according to their size.	• Karyotype of human male (44+XY). • Karyotype of human female (44+XX).
Mendel's 1st Law	Law of Segregation	• One pair of allelomorphic (contrasting) characters. • In meiotic division, the genes carried on the chromosome pairs are segregated into the gametes.	• The dominant trait appears in the first generation with 100%. • The dominant and recessive traits appear together in the second generation in a ratio 3 : 1 respectively.
Mendel's 2nd Law	Law of Independent Assortment	• Two pairs of allelomorphic (contrasting) characters. • The assortment of genes carried on the chromosomes in gametes is independent because each gene is located on a separate chromosome.	• The two dominant traits appear in the first generation with 100%. • The second generation ratio is 9 : 3 : 3 : 1
The Interaction of Genes	Lack of Dominant	• The flower color character in ***Antirrhinum*** plant is controlled by a pair of genes, no one of them dominates over the other. • This happens due to the gene interaction where each one of these allelomorphic genes has an effect in the appearance of the **new character.**	• The first generation is 100% **new character**. • The second generation ratio is 1 : 2 : 1.

Genetic Classification of Blood Groups

Group	Antigens	Antibodies	Donates to	Receives from	Genetic structure	
A	A	anti-b	A & AB	A & O	AA	AO
B	B	anti-a	B & AB	B & O	BB	BO
AB	A & B	None	AB	All groups	AB	
O	None	anti-b & anti-a	All groups	O	OO	

	Rhesus Factor (Rh)	• The inheritance of (Rh) factor antigens is controlled by three pairs of genes, located on a pair of chromosomes. • The presence of any gene or more of these three pairs of genes in the dominant state leads to the formation of (Rh) antigens, and the person becomes (Rh^+), whereas all genes of the (Rh^-) individual are recessive.	
	Complementary Genes	• The genes that can often work together to emerge a specific trait, where the inheritance of this trait is controlled by 2 pairs of genes. • The appearance of the dominant character depends on the presence of a dominant gene at least in each pair. • The absence of any pair of dominant genes or both, will lead to disappearance of the dominant character and the recessive allelomorphic character appears.	• The dominant character appears in the first generation with 100%. • The dominant and recessive characters appear in the second generation in the ratio 9 dominant : 7 recessive.
	Lethal Genes	• Genes when present in a homologous condition (pure) cause harms to the living organism resulting in disruption of some vital processes leading to the death of organism at different stages of life.	• Dominant lethal genes Ex. (yellow fur colour in mice) • Recessive lethal genes Ex. (infantile dementia in humans)

Sex Determination in Human		• The presence of chromosome Y stimulates the production of male hormones. • The absence of chromosome Y stimulates the production of female hormones.	• After 6 weeks from the beginning of pregnancy. • After 12 weeks from the beginning of pregnancy.
Abnormal Chromosomal Cases in Human		• Abnormal individuals due to errors in gametes formation. • Reduction or an increase in the number of sex chromosomes or autosomes.	• Klinefelter's syndrome. (44+XXX) • Turner's syndrome. (44+X) • Down's syndrome. (45+XY) & (45+XX)
	Sex - Linked traits	• Genes are located on sex chromosomes only (X and Y).	• Inheritance of eye color characteristic in ***Drosophila*** insects.
	Sex – Influenced traits	• Genes are located on the autosomes, not on the sex chromosomes. • These genes are influenced by the male or female sex hormones.	• Inheritance of horns trait in some cattles. • Inheritance of baldness trait in human.
	Sex – Limited traits	• Traits whose appearance is constricted (limited) on one sex only due to the differences in sex hormones of each sex.	• Milk production trait in females. • The appearance of beard trait in males. • Egg laying trait in female birds.

Choose the correct answer:

1- If you know that the number of somatic chromosomes in a kangaroo sperm is 6 chromosomes , the number of chromosomes from its hair is ....

a) 7 b) 14 c) 8 d) 16

2- Bahgat syndrome or silk road is a rare disease and it is a form of vascular inflammation that may cause death as a result of rupture of blood vessels and caused by a defect in chromosome number (7), in light what you studied similar case is ....

a) Lethal gene b) Klinefelter c) Dawn d) Turner

3- When the blood group for one of the parents is (AB), the percentage of blood group for one children (O) is ....

a) Zero b) 25% c) 50% d) 75%

4- Blood group which contain the largest number of antigens is.............

a) (A^+) b) (AB)+ c) (B+) d) (O-)

5- When crossing a brown bull with a yellow cow, the offspring was 100% red cows when mating between red and yellow cows , the ratio is ....

a) (3:1) b) (1:2:1) c) (1:1) d) (2:1)

6- In case of complementary genes (pea flower) the number of genotypes for white colour is ....

a) (5) b) (4) c) (3) d) (2)

7- If you know that muscles atrophy disease is a lethal genes in human, when mating a pure dominant male with a female hybrid the individual who will die before puberty is recessive

a) (aa) b) (Aa) c) (AA) d) Offspring don't die

8- When a part of the white Himalayan rabbit's hair was removed from its back until new hair came out, the new hair was black due its influence by an external factor, which is ....

a) The light b) Coldness c) Abundant oxygen d) The rain

9- The reason for the spread of colour blindness in males is ....

a) Dominant gene b) One dominant gene is required for it to appear c) The presence of (y) chromosome d) One recessive gene is required for it to appear

10- If both the mother and father have normal hair and giving birth bald male, so the possibility of having a female with normal hair is .... %

a) 100 b) 25 c) 50 d) 75

First year secondary

Biology

Choose the correct answer:

1- If The number of autosomes in an ova of aliving organism are (X), So the number of chromosomes in the somatic cell are ....

a) X b) 2X c) X + 1 d) 2X + 2

2- Two yellow mice are crossed, they give birth 12 mice. So, the yellow mice number are ....

a) 8 b) 6 c) 4 d) 3

3- The ratio of gametes with (Ab) genotype, that can be produced from a genotype (Aabb) is ....

a)25 % b) 50 % c) 75 % d) 100 %

4- If a normal ova has been fertilized with sperm (22 + X) is ....

a) Kline felter male. b) Turner female.

c) Normal female. d) Normal male.

5- Kline Felter male is similar to Down`s male in ....

a) Sex chromosomes number. b) Presence of (Y) chromosome.

c) Number of (X) chromosomes. d) Number of autosomes.

6- Man and woman both of them (Aa) are married an individual with (AA) may appear is ....

a)25 % b) 50 % c) 75 % d) 100 %

7- AABb genotype can produce .... type of gametes.

a) one b) two c) three d) four

8- Number of pink flowers that can produced from crossing between two Antirrihinum plants both of them with pink flowers ....

a) 100 % b) 75 % c) 50 % d) 25 %

9- Normal father and mother with normal hair for both gave a bald son, To produce normal haired female in ratio ....

a)25 % b) 50 % c) 75 % d) 100 %

10- The genotype of a birth (A) to woman with (AB) blood group can`t related to husband with .... blood group.

a) BB b) BO c) AB d) OO

Cairo governorate
sateen & Dar Al Salam
ucational Administration

Supervision of Science

April Exam 2021

First Secondary	Biology	Time: 30 min

ose the correct answer

n Karyotype of a human female, the pair of chromosomes that is larger than the pair no. 7 in size is the pair no. ....
a. 23 b. 6 c. 22 d. 9

The percentage of the mice lost when crossing a yellow coloured male with a grey-coloured female is ....
a. 0% b. 25% c. 50% d. 75%

If crossing takes place between yellow smooth seeds of pea plant with the genotype (YySs) with another plant having green wrinkled seeds, The ratio of the resulted generation will be ....
a. 9:3:3:1 b. 3:1 c. 1:1:1:1 d. 1:2:1

. The ratio between the number of antigens that determine the blood group AB- and number of genes that determine the blood group O+ is ....respectively
a. 2:1 b. 3:1 c. 1:1 d. 1:2

5. When crossing a white flowered pea plant with a pink flowered one, there were 3/8 of the offspring are pink flowered and 5/8 were white flowered which of the following represents the genotypes of the parents?
a. AaBb x AaBb b. AaBB x Aabb c. aabb x AaBb d. aaBb x AaBb

6. All the following traits are from sex limited traits except ....
a. Milk production b. egg laying c. appearance of beard d. hemophilia

7. When a healthy man married to a colour blinded woman, this disease will appear in .... of the offspring.
a. all females b. all males c. half males d. half females

8. In premature baldness, $B^{+}B$ is ....
a. a normal hair male and female
b. a normal hair female
c. a bald-headed male and a female suffered from loss of hair
d. a female suffered from loss of hair.

9. Each phenotype has one genotype in a case of ....
a. Complete dominance
b. lack of dominance
c. Complementary genes
d. multiple alleles

10. The opposite Karyotype represents a ....
a. Turner female
b. normal female
c. Klinefelter male
d. Down male

Biology

Choose the correct answer :-

1- If the body cells contain 2x + 2 chromosomes ,the number of autosomes in the ovum is.......

a- x+1　　b- 2x　　c- 2x + 1　　d- x

2- The percentage of gametes with genotype(ab) that are produced by an individual with genotype Aabb is........

a- 25%　　b- 50%　　c- 75%　　d- 100%

3- The person whose red blood cells contain three types of antigens, his phenotype is ....

a- $ABRh^+$　　b- $ABRh^-$　　c- ORh^+　　d- ORh^-

4-The person who can donate blood to all blood groups has phenotype ....

a- AB^+　　b- AB^-　　c- O^+　　d- O^-

5-When crossing two pea flower plants both of them have(AaBB) genotype, the percentage of white flowers in the resulted generation is.............

a- 100%　　b-75%　　c- 50%　　d-25%

6- When crossing two yellow-coloured mice, the resulted offspring after birth were 9 mice. So the number of yellow-coloured mice is about......

a-9　　b- 6　　c-3　　d-2

7- When a healthy man married a colour-blinded woman , this disease will appear in............of their offspring

a- all females　　b- half females　　c- all males　　d- half males

8- When a normal hair man married to a normal hair woman (hybrid), What is the ratio of appearance of baldness in the males from offspring ?

a-50%　　b- 25%　　c- 100%　　d- 0%

9- The individual resulted from fertilization of a normal ovum by a sperm(22+ is a ....

a- normal male　　b- Klinefelter's syndrome

c- Turner's syndrome　　d- normal female

10-The chromosomal structure of a person with Turner's syndrome and suf from haemophilia is.......

إجابة أسئلة الـ Biology

الصف الأول [illegible] / 2021

السؤال	الإجابة
1	D
2	B
3	A
4	D
5	D
6	B
7	C
8	A
9	D
10	D

[illegible] الدرجة 1 × 10 = 10 درجات

محافظة الجيزه

اداره 6 اكتوبر التعليميه

الصف الاول الثانوى

امتحان شهر ابريل عام 2020 - 2021

الزمن ساعه ونصف

ورقه مجمعه (Biology—physics—chemistry)

(Choose the correct answer)

Q1/The somatic cells of living organism are differs from gametes in all Of the following except...

A) The type of division which resulted from it

B) The number of chromosomes which carried on it

C) The location of chromosomes in each of them

D) The karyotype for each

Q2/The blood group that receive blood from all other blood group

a) AB+ (b) O (c) AB (d) O

Q3/may be produced individuals carrying dominant trait from two Parents carried recessive trait in case.................................

A) Sex linked (B) complete dominant

C) Complementary of genes (D) lack of dominant

Q4/If percentage of gamete (SY) is 25%-so the genotype of this Individual is (a)-(SSYY) b)SSYy

(c)-SsYY (d) SsYy

Q5/Number of chromosomes in female dawn's equal number of

Chromosomes in all of the following except.......................................

a) (Male klinfelter) (b)male dawn's syndrome

c) Polyploidy XXX (d) female turner

Q6 /The chromosome is consisting of............

a) Fats and DNA b) histone and gene

c) DNA molecule and protein d) nucleotides

Q7/The individual that have recessive trait. If they take......from two parents

a) One gene dominant b) two genes dominant

c) Two genes recessive d) one dominant and other recessive

Q8/from characteristics of blood group (B).........

a) can transferred to any blood group b) recessive from all blood group

c) Does not contain anti substances d) may be pure or hybrid

Q9/If the human embryo does not contain chromosome (Y) .so

a) The genital organs will differentiation after6 weeks
b) The genital organs will differentiation after 12 weeks
c) Sexual growth will stop after 6 weeks
d) Male hormones activate to determine the sex

10-unlike to Mendel's principle, two phenotype only by ratio (2/1) in case

A) flower's colure in pea flower B) antirrhinum plant

) Flower of pea plant d) fur of mice

اسم الطالب/

توقيع الملاحظين المادة/ رقم الجلوس /

Language school
...... Educational zone
Frist secondary

Biology exam

Cairo governorate
Time: ....

امتحان ابريل ٢٠٢١ للصف الاول الثانوى.(الأحياء بالانجليزية)

Choose the correct answer:

1)Which of the following statements is correct for the karyotype?

A. The number of chromosomes in all cells of the same species is constant.
B. The number of chromosomes in male differs from the female in the human cells.
C. The number of chromosomes in liver cells differ from pancreatic cells in human.
D. All cells of all living organisms have the same number of chromosomes.

2- Which cell of the following doesn't contain two identical sets of chromosomes?

a.Parenchyma cell.b.Ostrich egg cell.
c. A cell in Drosophila ovary wall.d.Companion cell in phloem.

3- From the properties of blood group (B) is that ....

a. It can be transfused to any other blood group.b. It receives blood from all blood groups.
c. It doesn't contain antibodies.d. It may be pure or hybrid.

... describes the chromosome thatdifferentiates between human

Third :Biology : Choose the correct answer:

1)If the number of autosomes in an ovum is X the body cells contain ....

(X , b.2X , c.X+1 , 2X+2)

2) The sperm in human carries all the following except ....

(The tall or short sex chromosomes , Half number of chromosomes found in somatic cells , 22 autosomes , The pair of sex chromosomes)

3)When crossing pea plants with purple flowers Rr the percentage of ppearance of purple flowers in resulted generation is... (100% , 75% , 25% , 0%)

4) The percentage of yellow feathered birds that resulted from crossing two red feathered birds RR is...........

(75% , 50% , 25% , 0%)

5)What are the genotypes of gametes produced from a person whose geotype is BBRr ....

(BR& br , BR & bR , BR & Br , Br & bR)

6)A person whose blood group is O+ so his/her blood cells have ....antigens on their surface

(Rh , Rh &b , Rh & A , Rh,A& B)

7)In order to find out the different types of gametes produced from a pea flower plant having genotype AaBb, it should be crossed to a plant with genotype...........

(AaBb , AABB , aabb , Aabb)

8) A normal sperm whose chromosomes do not contain sex chromosome that is responsible for life and can fertilize a normal ovum so----

(Down's case occurs , Klinefelter's case occurs , Fetus death occurs , Normal male is produced.)

9) when a bald headed man (pure) married to a mormal hair woman (hybrid) the possibility of appearance of a daughther who does not suffer from hair falling is ....

(25% , 50% , 75% , 100%)

10)If the lethal gene is dominant , the genotype of individuals that die is ....

(CC , Cc , cc , no correct answer)

Third :

Biology

Choose the correct answer from a, b, c, or d.

21-If the number of chromosome in a human skin cell is represented by (X), then the number of autosomes in a liver cell is ....

a. X −2 - b. X+2 c. 2X + 2 d. 2X

22- Number of chromosomes in human white blood cell is .... pairs.

a. 23 b. 44 c. 22 d. [illegible]

23- The individual having 45 chromosome in his somatic cells is always ......

a. with no definite sex - b. male - c. female - d. male or female

24-The pair of chromosome that represent the smallest one in size in human female is chromosome number ....

a. 22 b. 23 c. 7 d. 1

25- Which one of the following statements is correct ....

a) The presence of genetic information is not restricted on sex cells only.

b) The genetic information is present in body cells only.

c) The number of sex chromosomes is similar in male than female.

d) The type of sex chromosome is similar in human male and female.

26- If the individual has the genotype (Aabb) the number of gamete types is ....

a. 1 b. 2 c. 3 d. 4

27-The cell nucleus of human female liver cell contains..............

a) Sex chromosome only. b) Somatic chromosome only.

c) Homozygous pair of sex chromosome. d) Heterozygous pair of sex chromosome.

28- In lack of dominance, each phenotype has........

a.one genotype b. two genotypes c.more than two genotypes d. non all above

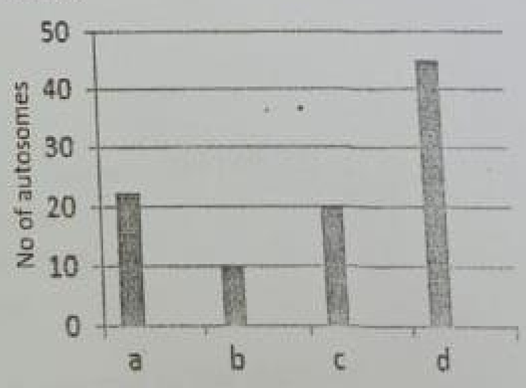
29- In a certain family, the type of blood group of a son is O and his mother B, so the type of blood group of his father is not ....

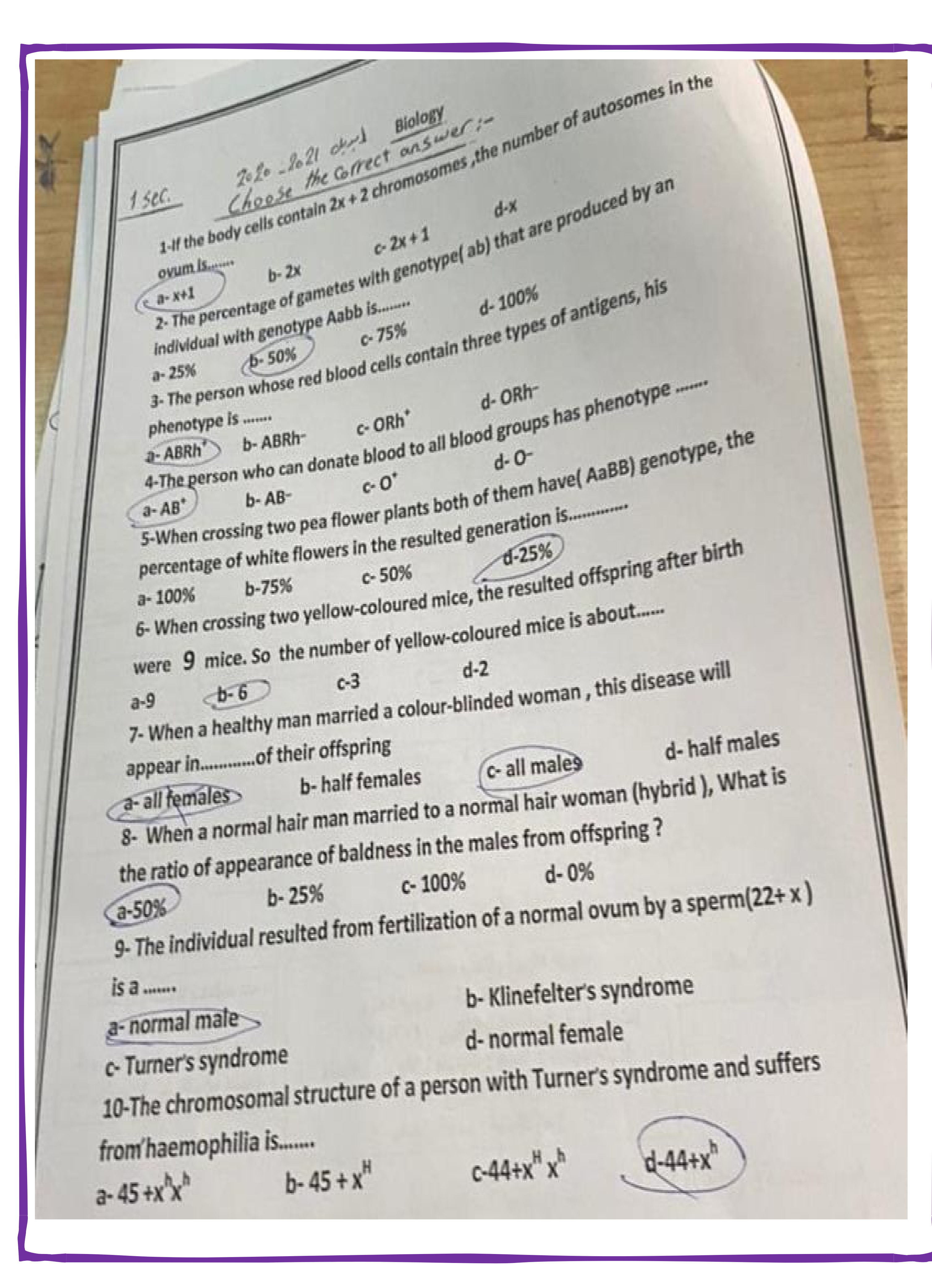
a. AB – b. B – c. O – d. A

30-Study the following graph, then answer the following questions;

The cell which may be a human gamete is cell...

(a - b - c - d)





1 sec. 2020 - 2021 ابريل **Biology**

Choose the correct answer :-

1-If the body cells contain 2x + 2 chromosomes ,the number of autosomes in the ovum is.......

a- x+1 b- 2x c- 2x + 1 d-x

2- The percentage of gametes with genotype(ab) that are produced by an individual with genotype Aabb is........

a- 25% b- 50% c- 75% d- 100%

3- The person whose red blood cells contain three types of antigens, his phenotype is ....

a- $ABRh^+$ b- $ABRh^-$ c- ORh^+ d- ORh^-

4-The person who can donate blood to all blood groups has phenotype ....

a- AB^+ b- AB^- c- O^+ d- O^-

5-When crossing two pea flower plants both of them have(AaBB) genotype, the percentage of white flowers in the resulted generation is..............

a- 100% b-75% c- 50% d-25%

6- When crossing two yellow-coloured mice, the resulted offspring after birth were 9 mice. So the number of yellow-coloured mice is about......

a-9 b- 6 c-3 d-2

7- When a healthy man married a colour-blinded woman , this disease will appear in............of their offspring

a- all females b- half females c- all males d- half males

8- When a normal hair man married to a normal hair woman (hybrid), What is the ratio of appearance of baldness in the males from offspring ?

a-50% b- 25% c- 100% d- 0%

9- The individual resulted from fertilization of a normal ovum by a sperm(22+ x)

is a ....

a- normal male b- Klinefelter's syndrome

c- Turner's syndrome d- normal female

10-The chromosomal structure of a person with Turner's syndrome and suffers from haemophilia is.......

a- $45 + x^h x^h$ b- $45 + x^H$ c-$44 + x^H x^h$ d-$44 + x^h$

Choose the correct answer for each of the following sentences:

t was clear from the two cells (1) and (2) that they are .... respectively.

(a) somatic cells from two different organisms
(b) somatic cell and sex cell from the same organism
(c) different somatic cells for the same organism
(d) sex cells for two different organisms

(1) (2)

(2) A woman suffers from upper eyelid relaxant, where this trait depends on the presen of dominant gene (E), the woman's father had this trait and her mother was normal. In light of this, answer the following ,The genotype of this woman is ....

(a) Ee (b) EE (c) ee (d) (a) and (b).

(3) The person who can donate blood to all blood groups has the phenotype...............

(a) O^+ (b) AB^+ (c) O^- (d) AB^-

(4) The inheritance of chorophyll absence character in corn plant is considered ....

(a) complementary genes. (b) lethal genes.
(c) lack of dominance. (d) complete dominance.

(5) The chromosomal structure of the ovum of female human is(are) ....

(a) (44 + XX). (b) (22 + XX). (c) (22 + X). (d) (44+X

(6) The individual resulted from fertilization of a normal ovum by a sperm (22 + X

(a) male with Klinefelter's syndrome. (b) female with Turner's syndror
(b) normal female. (d) normal male.

(7) The inheritance of colour blindness in humans is an example for a case of ...

(a) sex-influenced. (b) sex-linked traits.
(c) lack of dominance. (d) complete dominance.

8) If a daughter suffers from haemophilia, it is confirmed that the ....

(a) mother is infected. (b) father is infected.
(c) mother is carrier for the disease. (d) father is normal.

The genotype which leads to the emergence of pink colour in pea flow nt is............

(a) Aabb (b) AaBb (c) aaBB (d) aabb

A person whose blood group is (O^+) his/her red blood cells have ..... ce.

(a) Rh (b) Rh and B (c) Rh and A (d) Rh, A

the

/// Biology

(C)

Choose the Correct Answer for Each of the Following:

21. The male in Down's syndrome is different from the female in the ....
    a) Number of sex chromosomes. b) Number of autosomes.
    c) Type of sex chromosomes. d) Case symptoms.
22. The purple-coloured flower character appears in pea plant with two genotypes which are ....
    a) (RR) and (r r) b) (RR) and (Rr)
    c) (RR) and (RW) d) (Rr) and (r r)
23. The male who suffers from the colour blindness, ...
    a) His father suffers from the colour blindness.
    b) His mother suffers from the colour blindness.
    c) His mother is carrier for the gene of the disease.
    d) (b) or (c)
24. When crossing two pea flower plants with genotype (AABb), the percentage of white flowers in the resulted generation is ....
    a) 0% b) 25% c) 50% c) 75%
25. If you know that the number of chromosomes in the nucleus of a plant stem cell is (42) chromosomes, the numbers of chromosomes in a pollen grain for that plant equals ....
    a) 21 b) 24 c) 42 d) 84
26. Which blood group contains (anti-a) only? ....
    a) A b) B c) AB d) O
27. The person who has 45 chromosomes in his/her cells is always ....
    a) male b) female c) male or female d) unspecified sex.
28. If the number of chromosomes in a human skin cell is (23) pairs, the number of autosomes in the sperm is ....
    a) 22 b) 23 c) 22 pairs d) 23 pairs
29. The trait which its appearance is affected by the sex hormones in animals is ....
    a) colour blindness b) haemophilia
    b) baldness d) the horns trait
30. The number of autosomes in the ovum of a normal female is ....
    a) 22 b) 23 c) 45 d) 46

....
10